IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Heuser et al.	Art Unit	: 1712
Serial No.	: 10/798,712	Examiner	: Robert A. Vetere
Filed	: March 10, 2004	Conf. No.	: 5002

Title : METHOD FOR FORMING AN ARRANGEMENT OF BARRIER LAYERS ON A POLYMERIC SUBSTRATE

Mail Stop Appeal Brief - Patents
Commissioner for Patents
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Alexandria, VA 22313-1450

REPLY BRIEF IN RESPONSE TO EXAMINER'S ANSWER DATED NOVEMBER 9, 2011

Pursuant to 37 C.F.R. §41.41, the appellant responds to the Examiner's Answer as follows.

Graff '210 does not disclose

> modifying at least a portion of the second surface of the first ceramic barrier layer such that the second surface of the first ceramic barrier layer comprises a material different from the material of the first ceramic barrier layer below the second surface to introduce first nucleation sites on the second surface; and
>
> forming a second ceramic barrier layer directly on the second surface of the first ceramic barrier layer without continuing all defects of the first ceramic barrier layer, wherein the second ceramic barrier layer is initiated at the first nucleation sites;

as claimed by the appellants.

In his "Response to Argument", Examiner Vetere notes that he "agrees that Graff '210 teaches a method of deposition wherein inorganic layers are first deposited followed by organic layers (see, e.g., ¶ 0016)[.]"[1] However, the appellants submit that Examiner Vetere's assertion that "Graff '210 further teaches that a fourth inorganic layer can be deposited directly onto the third inorganic layer without an intervening organic layer (¶¶ 0017-0018)" is inconsistent the disclosure of Graff '210. The cited paragraphs of Graff '210 read

> [0017] In general, in one aspect, the invention features a multi-layer environmental barrier coating having a flexible substrate, a foundation stack and at least one barrier stack deposited over the foundation stack. The foundation stack includes a foundation barrier layer fabricated of at least one ply of a first

[1] Examiner's Answer dated November 9, 2011, page 7.

> inorganic material deposited over the substrate, and an organic layer fabricated of at least one ply of an organic material deposited over the foundation barrier layer. Each barrier stack includes a barrier layer of at least one ply of a second inorganic material, and an organic layer fabricated of at least one ply of an organic material deposited over that barrier layer. The multi-layer environmental barrier coating also includes a topmost isolation layer of a third inorganic material deposited over the barrier stack. At least one of the inorganic plies of the multi-layer environmental barrier coating is desirably plasma-treated.
>
> [0018] The barrier-stack barrier layer may also include at least one ply of a plasma-treated fourth inorganic material. The flexible substrate may be substantially transparent. Further, the substrate may be plasma-treated, and may be fabricated of, for example, polynorbornene, polyarnide, polyethersulfone, polyimides, polyetherimide, polycarbonate, polyethelene naphthalate, polyester, and nylon. In one embodiment of the invention, the substrate is made of a polyester film. At least one side of the flexible substrate may include a functional coating selected from the group consisting of an adhesion-enhancing coating, scratch-resistant coating, anti-fingerprint coating, anti-static coating, slip control coating, optical control coating, such as, for example, an anti-reflective coating or viewing-angle-control coating, and conductive coating.

This text makes it clear that the layers of the third and fourth inorganic material disclosed by Graff '210 are not stacked, as suggested by Examiner Vetere, by "forming a second ceramic barrier layer directly on the second surface of the first ceramic barrier layer" as claimed by the appellants since the third inorganic material layer is described as "a topmost isolation layer of a third inorganic material deposited over the barrier stack" in paragraph [0017].

Examiner Vetere suggests that paragraphs [0017] and [0018] refer to embodiments of Graff's system.[2] However, there is no indication that these paragraphs refer different systems. Moreover, even if paragraphs [0018] and [0019] do disclose different embodiments, Graff '210 is completely silent about the position of the fourth inorganic material layer and thus does not disclose that the fourth inorganic material layer is applied on top of the third inorganic material layer. "For a claim to be anticipated, each claim element must be disclosed, either expressly or inherently, in a single prior art reference, and the claimed arrangement or combination of those elements must also be disclosed, either expressly or inherently, in that same prior art reference."[3]

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[2] Examiner's Answer dated November 9, 2011, page 7.

[3] *THERASENSE, INC. and Abbott Laboratories v. BECTON, DICKINSON AND COMPANY, and Nova Biomedical Corporation*, 593 F.3d 1325, 1332 (CAFC, 2010).

It is not enough that the structure claimed by the appellants might possibly be present in the embodiments described by Graff '210.[4] Thus, for at least this reason, Graff '210 does not anticipate the pending claims.

Moreover, Graff's paragraph [0094] cited by Examiner Vetere does not remedy this deficiency because paragraph [0094] does not disclose

> modifying at least a portion of the second surface of the first ceramic barrier layer such that the second surface of the first ceramic barrier layer comprises a material different from the material of the first ceramic barrier layer below the second surface to introduce first nucleation sites on the second surface; and

As the appellants previously noted, Graff'21 0 discloses explicitly that a plasma-treatment of ceramic layers can be performed to remove contaminants that, particularly at interfaces, are often linked to failure mechanisms for composite structures and often account for interlayer adhesion deficiencies in multi-layer constructions. Accordingly, reduction or elimination of contaminants is highly desirable.[5] A plasma-treatment is, therefore, useful for removing this species. Graf '210 explicitly explains that "a plasma-treatment with each unwind [of the web substrate wound on rollers] may reduce contamination resulting from face-to-back interactions that may have

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[4] See id. "The way in which the elements are arranged or combined in the claim must itself be disclosed, either expressly or inherently, in an anticipatory reference. "Anticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim." Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 1548 (Fed.Cir.1983). The requirement that the prior art elements themselves be "arranged as in the claim" means that claims cannot be "treated ... as mere catalogs of separate parts, in disregard of the part-to-part relationships set forth in the claims and that give the claims their meaning." Lindemann Maschinenfabrik GMBH v. Am. Hoist & Derrick Co., 730 F.2d 1452, 1459 (Fed.Cir.1984). "[U]nless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102." Net MoneyIN, Inc. v. VeriSign, Inc., 545 F.3d 1359, 1371 (Fed.Cir.2008) (emphasis added).

The concept of "inherent disclosure" does not alter the requirement that all elements must be disclosed in an anticipatory reference in the same way as they are arranged or combined in the claim. "[A]nticipation by inherent disclosure is appropriate only when the reference discloses prior art that must necessarily include the unstated limitation...." Transclean Corp. v. Bridgewood Servs., Inc., 290 F.3d 1364, 1373 (Fed.Cir.2002). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Cont'l Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1269 (Fed.Cir.1991) (quoting In re Oelrich, 666 F.2d 578, 581 (CCPA 1981)); see also Trintec Indus., Inc. v. Top-U.S.A. Corp., 295 F.3d 1292, 1295 (Fed.Cir.2002) ("Inherent anticipation requires that the missing descriptive material is 'necessarily present,' not merely probably or possibly present, in the prior art." (quoting In re Robertson, 169 F.3d 743, 745 (Fed.Cir.1999))). For a claim to be anticipated, each claim element must be disclosed, either expressly or inherently, in a single prior art reference, and the claimed arrangement or combination of those elements must also be disclosed, either expressly or inherently, in that same prior art reference."

[5] See, e.g., Graff '210, paragraph [0083].

occurred in the wound roll of the web substrate".[6] Consequently, Graff '210 merely describes that a plasma-treatment is used for removing species which result from winding and unwinding of a substrate with deposited layers on it. However, Graff '210 fails to disclose that the plasma-treatment results in an introduction of nucleation sites which are different from the material of the treated ceramic layer as regarding, ceramic materials, the use of a reactive gas is not disclosed.

For these reasons, and the reasons stated in the Appeal Brief, Applicant submits that the final rejection should be reversed.

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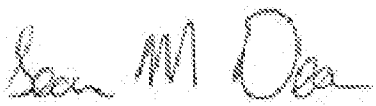
Respectfully submitted,



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[6] See, e.g., Graff '210, paragraphs [0088] and [0090].